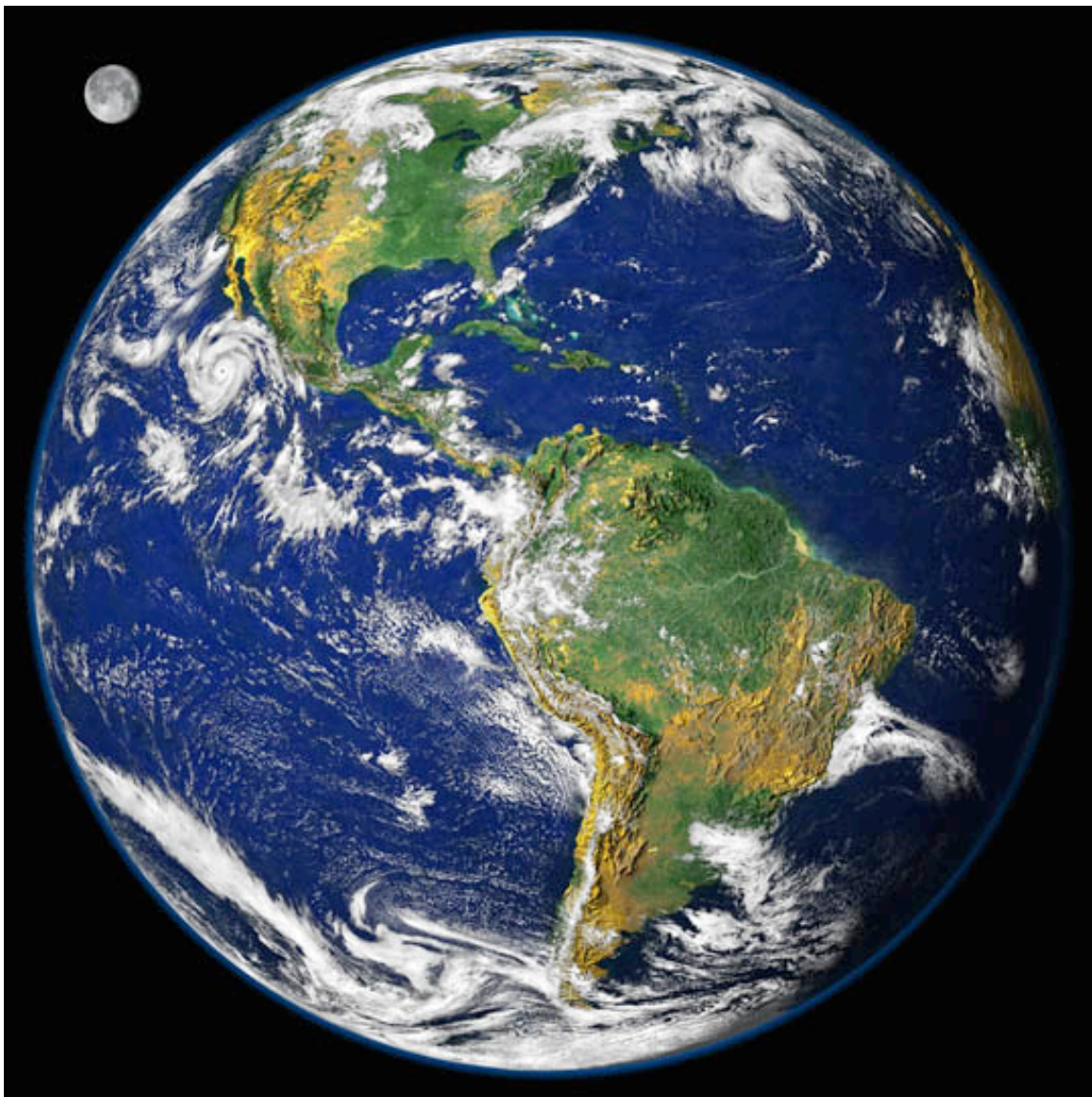

Georeferencing your curriculum

A guide to planning and organizing geospatial activities in your school or classroom

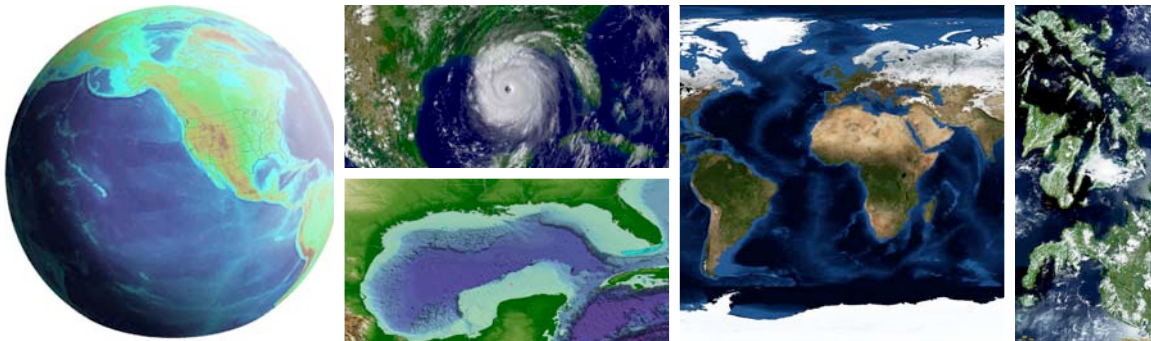
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WHERE DOES IT FIT?



Geospatial Images courtesy of USGS & NOAA

Probably the most important step in georeferencing the curriculum is to find the geographic and spatial ties to the subject and topics you teach. You must first consider how your idea is connected to the curriculum. Begin by looking for spatial qualities and geographic themes inside of required curriculum. The table below provides examples of concepts and themes you might begin with.

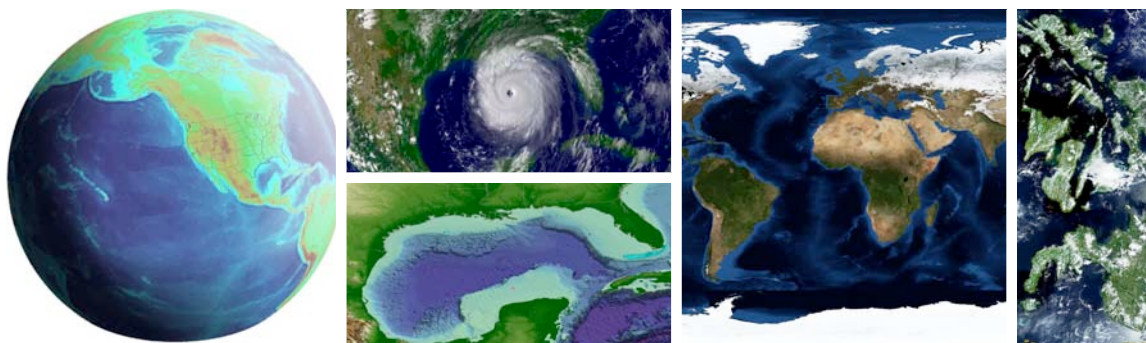
Concepts	Possible Spatial/Geographic Themes
Change & Movements	journeys, travel, life/biography, diasporas, change over time,
Location & Place	historical events, setting of a story, communities, hometowns, sporting locations
People	demographics, minorities, careers, housing, political
Environmental	natural disasters, natural resources, land formations, climate

Once you have found the tie between your curriculum and your geospatial idea you must begin to consider the pedagogical approach you will take. What is your teaching style? Utilizing geospatial tools with students requires a certain level of comfort with a guide-on-the-side approach. Are you comfortable with discovery as a pedagogical approach? These technologies also lend themselves to educator and student discovery.

Transitioning your concept and idea from a broad concept and theme into classroom exploration requires planning. Begin with the framework for the lesson or activity in the form of the goal or objective. How does the geospatial technology build upon or compliment the goal(s) or objective(s)?

The final consideration of “fit” is how the georeferenced curriculum will enhance and enrich student learning. Geospatial technologies are powerful tools. How will students use the geospatial technology to communicate an idea? a community need? a global problem? How does this activity or project then build upon the student’s life experiences, real world issues and/ other curriculum pieces?

WHAT DO YOU ALREADY HAVE TO SUPPORT THIS ENDEAVOR?



Photos Courtesy of USGS, NASA & EROS

Your first consideration when considering geospatial activities for the classroom should be what do you have in place to support the activities you want to do. Considerations should include the facilities, technology, time constraints, and support. Provided are some guiding questions that may be used a checklist to begin the journey of creating geospatial activities in your classroom or school.

Facilities

- What classrooms, computer labs, open spaces, or outdoor venues can be used?
- What are the electrical capabilities of the space (no power available, one electrical socket, multiple outlets, powerstrips/extension cords/surge protectors)?
- Do you need a projector? Is there a projector? Is there a surface to project on (screen, blank wall, etc)?
- Can desks, tables, chairs be moved or reorganized?
- How many individuals does the space comfortably and safely accommodate?

Technology (*software, hardware and peripherals*)

- What computer technology is accessible (a mobile wireless cart of laptops, one-to-one laptops in a classroom, desktop computer lab, one desktop computer, one laptop computer, none)?
- Is there internet connectivity? Is it wireless or hard wired? What is the connection speed? Who has access to the internet (teacher only, students, one computer, all computers)? Are there websites that are blocked or firewalls in place that might hinder access to resources?
- If data ports are available what are their location and is/are they accessible (not blocked by furniture or other structures)?
- Can materials be saved to the computer (i.e. data)?
- Can programs be installed on computers? Who can install it (teachers, students, IT staff, etc)?
- What software is installed? What software needs to be installed? Is there a free version of the software available?
- Will the computer support the software? Is it the right platform? Is there enough space on the hard drive? Is there enough RAM necessary to run the program?
- If network installation of software is required, is there someone to install it? How long will it take? Does the license allow network installations?
- Are their peripherals needed (i.e. mouse, printer, digital camera, GPS receiver, flash memory stick, CD-ROM drive, DVD-ROM drive, etc)?
- Are their the necessary connections for the peripherals (usb ports, access to printer, etc)?

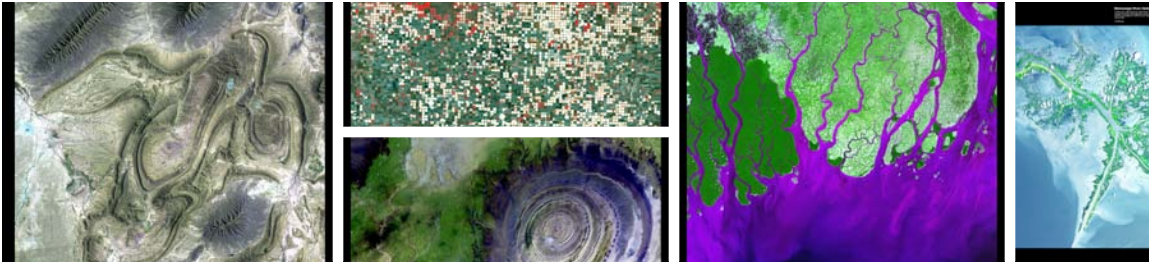
Time Constraints

- Is this a project or lesson that will take a class period? multiple class periods? weeks? months?
- Is there flexibility in the student or school schedule needed for the project or lesson plan?
- Are there tests, holidays, field trips, or other events that might interrupt the momentum of the process?
- Will other individuals time constraints affect the process (i.e. a community partner's availability)?
- Are there facility time limitations (i.e. a computer lab or a computer cart only available one day or one class period)?

Support (*administrative, other faculty/staff, parents, community*)

- Is there support of the administration of your project or lesson plan? While this is helpful it should not be a stopping point for proceeding with your project.
- Are there other faculty or staff members interested or willing to collaborate? or to assist in the project? (i.e. media specialists, IT staff, gifted educators, special education educators, resource teachers, para-educators, etc)
- Are there parents willing to assist in the project or lesson plan?
- Are there community partners that can be sought out (for data, for technical assistance, for guidance, for guest speaking engagements, etc)?

WHAT DO YOU NEED TO MAKE THIS WORK?



Photos Courtesy of USGS, NASA & EROS

After a survey of your surroundings, you now know what is available. The next step is to determine what your needs might be. You may have assessed that you do not have something from the questions above but do not let that stop you! There may be an alternative means of delivery and exploration in the project. This is the time to think outside of the box and reach out to colleagues and the community.

Before the project begins

You may want to begin with the next series of questions begin planning for your geospatial idea for classroom integration.

- Do you intend this to be one lesson or activity or a long-term project?
- What is your time frame? i.e. Do you want to implement this next week? next month? next school year?
- What are the budget considerations? For example, part of your plan may have been to include the creation of poster sized student generated maps but your school does not have printers nor does it have a plotter (a printer for large-scale printing). Is this necessary? If so, now is the time to reach out to your community. Is there a survey company or a local agency that creates maps or posters? Would they be willing to assist you in this project? Will it cost or will they donate the time or materials? You may find the community will want to become involved.
- Have you thought of the materials that you might need? What are the materials need to be prepared? What existing materials can be tweaked to fit or used as is?
- What are the facilities needs? Scheduling computer labs, laptop carts, field experiences and other parts of the experience are important considerations in creating the expected timeline of the project, activity or lesson.
- What are your equipment needs? For example, during the lesson you might have thought software and GPS units might be needed, however in your first step you found

another teacher has a classroom set of GPS units she is willing to lend you and your technical support person helped locate free software and is willing to assist in setting up the computers for use during the project.

- Do you need assistance from a colleague? a community partner? parents?
- What background knowledge or skills must the students have?

During the project

Retrieval and storage of data is key to successful geospatial activities in the classroom. Things to think about:

- How will you share the data necessary for completion of the project?
- Will you have a CD of data?
- Where will the data be downloaded from?
- Will the data be downloaded from a local server?
- Will the students download data from the internet?
- Can everyone download at the same time?

Classroom Management

- Need for flexibility once the project is underway and ability to change as needed
- Different class periods at different stages
- Grouping: one to one; one to many
- What accommodations will need to be made, if any, for students with special needs?

After the project

A key part to the plan is envisioning what the finished product or learning outcome might be and how it will be assessed. There are many possibilities:

- Is it a teacher-prepared handout or worksheet that students record their answers on?
- Is it a map layout that each student or group prepares?
- Was what they learned the research for the next step of a lesson or project?
- Will the map or series of maps integrated into a multimedia presentation (PowerPoint, video, podcast, website, publication, etc)?

Also important to consider is what are the benefits of learning or presenting in this way?

CONCLUSION

Students always ask, “Why do we need to know this?” In the GIS in Education community, the question is “Why do we need to use GIS?” Incorporating what students need, required elements and standards with what consistently works in the classroom challenges every educator. GIS is an excellent tool to connect all the elements that create successful curriculum. We hope this document is helpful for creating this meaningful curriculum that uses GIS as the core connecting tool.

NOTES:
